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Attorney for Applicant

Date: 10 September 2007



DAF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 10/689,390
Applicant: BEAUMONT, Mark
Filed: 20 October 2003
Title: Method of Rotating Data in a Plurality of Processing Elements
Art Unit: 2183
Examiner: PETRANEK, Jacob A.
Docket No.: PAT001063-000

TRANSMITTAL LETTER

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P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Examiner's Answer to Appellant's Appeal Brief filed in the above-captioned application, enclosed is Appellant's Reply Brief Under 37 C.F.R. § 41.41.

The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to our Deposit Account No. 50-3013. A copy of this Transmittal Letter is enclosed.

Respectfully submitted,



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APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41

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Alexandria, VA 22313-1450

Sir:

This Reply Brief is in response to the Examiner's Answer to Appellant's Appeal Brief,
mailed on July 16, 2007, and is pursuant to 37 C.F.R. § 41.41.

INTRODUCTION

On page 3 of the Examiner's Answer, the caption "New Claim Rejections – 35 U.S.C. § 103" appears. However, the rejections set forth in the Examiner's Answer are the same as the rejections in the final Office action, which have been addressed in applicant's opening brief. This Reply Brief is therefore directed to responding to Section (10) of the Examiner's Answer entitled "Response to Argument."

ARGUMENT

1. The examiner used an incorrect standard in determining obviousness.

The appellant respectfully points out that the use of "a preponderance of evidence" as the legal standard of proof required for determining the patentability of the claimed invention was not arbitrarily established by the appellant in appellant's appeal brief mailed on January 3, 2007. The use of "a preponderance of evidence" as the legal standard of proof required to determine the patentability of the claimed invention has been established by the courts and adopted for use in examination by the United States Patent and Trademark Office. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed Cir. 1992) and MPEP 2142. The Office's assertion, in the Examiner's Answer mailed July 16, 2007, that the Supreme Court's opinion in *KSR International Co. v. Teleflex Inc. et al.*, 550 U.S. ____ (2007) (hereinafter "*KSR*") changed the legal standard of proof required for determining the patentability of the claimed invention is not supported by the Supreme Court's opinion or the Office's current policy for examination of patent applications.

The Office issued a memorandum on May 3, 2007 addressing the Supreme Court's opinion in *KSR* and the immediate changes to the Office's current policy for examination of patent applications. The memorandum stated that *KSR* affirmed the *Graham* factors for

determining obviousness, rejected a rigid application of the teaching, suggestion, or motivation test for determining obviousness, and that the analysis supporting an obviousness rejection should be made explicit. The memorandum further stated that “the Office is studying the opinion and will issue guidance to the patent examining corps in view of the KSR decision in the near future,” and “in formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed.” Neither *KSR* nor the memorandum issued by the Office changed the legal standard of proof required for determining the patentability of the claimed invention. Accordingly, the use of the speculative “could be” standard of proof instead of the proper legal standard of “a preponderance of evidence” shows that the Office’s rejection of independent claims 1, 8, 15, 22, 29, and 36 as well as dependent claims 2-6, 9-13, 16-20, 23-27, and 30-34 in the Final Office action mailed August 23, 2006 is improper because the Final Office action fails to apply the correct legal standard of proof for rejections made under 35 U.S.C. § 103.

The Office further asserts, in the Examiner’s Answer mailed July 16, 2007, that the speculative “could be” standard of proof used for determining the patentability of the claimed invention in the Final Office action was taken out of context. This assertion contradicts the language used in the Final Office action. The Office uniformly applied the speculative “could be” standard in the rejection of claims 1-6 in the Final Office action as is evident by repeated use of the “could be” standard throughout the Office action. The Office relies upon the language “could be” or “could have been” in the explanation of the rejection for each of the claims 1-6. See pages 3-4, paragraph 10, pages 4-5, paragraph 11, page 5, paragraph 12, pages 5-6,

paragraph 13, and page 6, paragraphs 14-15 of the Final Office action. The rejection of the other claims relies upon the reasoning underlying the rejection of claims 1-6.

Perhaps recognizing the weakness of the “out-of-context” argument, the Office then asserts that applicant’s standard is not correct in view of *KSR*. That position is fully addressed, *supra*.

The Office clearly applied an improper legal standard of proof in the Final Office action when rejecting independent claims 1, 8, 15, 22, 29, and 36 as well as dependent claims 2-6, 9-13, 16-20, 23-27, and 30-34.

2. The appellant is not attacking the references individually.

To reach a proper determination that the claimed invention would have been obvious under 35 U.S.C. § 103, the prior art references, when combined, must teach or suggest all the claim limitations. The appellant’s argument that the combination of Crozier¹ and Pechanek² fails to teach or suggest all the claims limitations is not an attack on the prior art references individually. Instead, the appellant is arguing that the prior art references, when combined, fail to teach or suggest all the claim limitations. En route to that conclusion, it is entirely appropriate to begin with an examination of what each reference discloses.

The Office explicitly states in paragraph 48 on page 14 of the Final Office action that Crozier does not disclose rotating data in a plurality of processing elements. Therefore, the Office must determine if the combination of Pechanek and Crozier discloses or suggests rotating data in a plurality of processing elements; the combination does not.

¹ U.S. Patent No. 5,081,700.

² U.S. Patent No. 6,338,129.

Pechanek discloses a nearest neighbor torus connected computer structure and does not teach or suggest a method for rotating data in the nearest neighbor torus connected computer. Accordingly, the rejection of independent claims 1, 8, 15, 22, 29, and 36 as well as dependent claims 2-6, 9-13, 16-20, 23-27, and 30-34 under 35 U.S.C. § 103 is improper because Crozier and Pechanek, when combined, fail to teach or suggest a method for rotating data in a plurality of processing elements.

The appellant further points out that the Office failed to consider Crozier in its entirety. The Office, on page 15 of the Examiner's Answer mailed July 16, 2007, asserts that figure 5 of Crozier discloses "a three shears shifting process that is done *on a single processor*" (emphasis added). That assertion is incorrect. Crozier explicitly states in column 5, lines 39-55, that figure 5 shows the three shears shifting process being performed by the corresponding rotation hardware:

Refer now to FIGS. 5A to 5D showing a further diagrammatic representation of the rotation of a character using alphanumeric bit positions. It will be noted that slice or word column S1 when translated from FIG. 5A to 5B has **no end around barrel shift rotation**. Micro columns S2 through S8 have been **barrel shifted by 1 through 7 bit positions** respectively as shown in FIG. 5B. The end around bit shifted character 5B is further linear array shifted by end around shifting the horizontal rows R1 through R8 zero through seven bit positions **to provide the information in FIG. 5C at the input of the barrel shifter 28 via line 35**. This information is again **barrel shifted during the second pass** as explained with reference to FIG. 5A to provide a character having bit positions or alphanumeric bit positions as shown in FIG. 5B which is the equivalent of the character H shifted 90o as shown in FIG. 4D. (emphases added)

Accordingly, the Office's rejection of independent claims 1, 8, 15, 22, 29, and 36 as well as dependent claims 2-6, 9-13, 16-20, 23-27, and 30-34 in the Final Office action is improper because the Office failed to consider the prior art references in their entirety.

3. There is no reasonable expectation of success.

To reach a proper determination that the claimed invention would have been obvious under 35 U.S.C. § 103, there must be a reasonable expectation of success that the teachings of the prior art references can be modified or combined. The Office's position that the nearest neighbor torus connected computer disclosed by Pechanek is a conventional approach to parallel processing architectures, and therefore a reasonable expectation of success exists for performing the inherent method performed by the rotation hardware of Crozier on the nearest neighbor torus connected computer of Pechanek is incorrect. The fact that the nearest neighbor torus connected computer disclosed by Pechanek is a conventional approach to parallel processing architectures impacts the reasonable expectation of success for implementing conventional parallel processing methodologies on the nearest neighbor torus connected computer disclosed by Pechanek. This fact does not establish a reasonable expectation of success for implementing processing methodologies of drastically different hardware on the nearest neighbor torus connected computer disclosed by Pechanek. The rotation hardware disclosed by Crozier is not a parallel processing architecture and the inherent method performed by the rotation hardware is not a parallel processing methodology. Therefore the fact that the nearest neighbor torus connected computer disclosed by Pechanek is a conventional approach to parallel processing fails to establish a reasonable expectation of success that the inherent method performed by the rotation hardware of Crozier will be able to be performed on the parallel processing hardware of Pechanek. The Office relies on the combination of the normal and usual operation of Crozier with the nearest neighbor torus connected computer of Pechanek in the rejection of all independent claims, and therefore, the above argument is applicable to all independent claims.

4. The Office has not established that a reasonable suggestion or motivation is found in the art.

To reach a proper determination that the claimed invention would have been obvious under 35 U.S.C. § 103 based on a combination of prior art elements, it is necessary to identify the reason why a person of ordinary skill in the art would have combined the teachings of the prior art in the manner claimed. The Office asserts that “it would have been obvious to one of ordinary skill in the art to implement Crozier’s method of image rotation on the parallel processor of Pechanek for the advantage of being able to efficiently process images.” See paragraph 10, page 4 of the Final Office action.

The appellant points out that there is no reason why a person of ordinary skill in the art would have combined the teachings of Crozier and Pechanek because the combination is inoperable. The Office incorrectly states that “Crozier disclose in figure 2 a single barrel shifter that is used to perform the process of shifting data in figure 5.” The single barrel shifter does not perform the process of shifting data in figure 5 because the single barrel shifter is limited to performing end around shifts in the vertical or column direction. The register array is required to perform end around shifts in the horizontal or row direction. See Crozier, figure 2, ref. nos. 28, 32, column 4, lines 23-48, and column 5, lines 17-25 and 39-58. The appellant further points out that the entirety of the rotation hardware disclosed in figure 2 is required to perform the process of shifting data. The rotation hardware of Crozier operates on a micro column word slice basis such that a micro column word slice of image data for an image is shifted in the vertical direction by the barrel shifter while another slice of image data from the same image is being shifted in the horizontal direction by the register array. Therefore, the rotation hardware of Crozier performs shifts in the vertical direction and horizontal direction on different slices of the image data during a cycle, while the parallel processor of Pechanek is limited to performing shifts in a single

direction during a cycle. Accordingly, the parallel processor of Pechanek cannot perform the inherent method performed by the normal and usual operation of the rotation hardware of Crozier. The Office relies on the same conclusory statement in the rejection of all independent claims, and therefore, the above argument is applicable to all independent claims.

The Office then admits that performing Crozier's method of image rotation on the parallel processor of Pechanek increases the processing latency over performing Crozier's method of image rotation on the corresponding rotation hardware of Crozier. See page 16 of the Examiner's Answer mailed July 16, 2007. The increase in latency for performing Crozier's method of image rotation contradicts the Office's reason for combining. The Office's assertion that the additional processing latency of performing Crozier's method of image rotation on the parallel processor of Pechanek is compensated for by a method that performs multiple shifts in a cycle is not taught or suggested by either Crozier or Pechanek. The appellant further points out that the inherent method performed by the normal and usual operation of the rotation hardware of Crozier performs multiple shifts in multiple directions in a cycle. The parallel processor disclosed by Pechanek is limited to performing multiple shifts in a single direction in a cycle. In addition to the increase in processing latency, the parallel processor disclosed by Pechanek must wait for all shifts in a single direction to be completed before the image data can be shifted in another direction. The explicit teachings of Pechanek that (i) the nearest neighbor torus connected computer structure shown in figure 1A introduces latency in the communications paths between processing elements and that (ii) Pechanek can perform a shift in only a single direction at a time lead to the conclusion that the nearest neighbor torus connected computer would operate inefficiently if it could somehow be made to perform the method of Crozier. Thus, the Office has failed to identify a reason why a person of ordinary skill in the art would

have combined the prior art elements in the manner claimed. The Office relies on the same conclusory statement in the rejection of all independent claims, and therefore, the above argument is applicable to all independent claims.

Appellant respectfully requests the Board of Patent Appeals and Interferences reverse the Office's rejection of the pending claims.

Respectfully submitted,



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